AMENDMENTS TO THE CLAIMS

1. (currently amended) A converter for providing an output voltage according to ~~an~~ a signed binary input code, the converter comprising:

a control logic for generating a positive control code and a negative control code according to the input code;

a positive electrical module for providing a positive current corresponding to the positive control code to an output;

a negative electrical module for providing a negative current corresponding to the negative control code to the output; and

an assistant electrical module for providing a non-zero current to the output when the negative electrical module provides the negative current to the output;

wherein the input code includes a sign code and a value code, and the sign code corresponds to a predetermined negative sign code, and the control logic encodes the value code as the negative control code by a first coding method, the first coding method being one's complement arithmetic coding.

2. (cancelled)

3. (currently amended) The converter of claim ~~2~~1 wherein when the sign code corresponds to a predetermined negative sign code, the control logic encodes the value code as the negative control code by a first coding method; and when the sign code does not correspond to a predetermined negative sign code, the negative control code generated by the control logic prevents the negative electrical module from providing the negative current.

4. (cancelled)

5. (currently amended) The converter of claim ~~2~~1 wherein when the input code

PAGE 8/22 * RCVD AT 6/17/2004 9:58:32 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729318 * CSID:8064986673 * DURATION (mm-ss):06-52

represents a first negative input code, the first negative input code is encoded by a second coding method, the second coding method being two's complement arithmetic coding.

6. (original) The converter of claim 1 wherein the assistant electrical module comprises a unit current source and each current provided by the negative electrical module is a multiple of the unit current.

7. (original) The converter of claim 1 wherein if the input code is a first positive input code, the control logic generates a first positive control code and a first negative control code according to the first positive input code, the first negative control code preventing the negative electrical module from providing the negative current to the output.

8. (original) The converter of claim 1 wherein if the input code is a first negative input code, the control logic generates a second positive control code and a second negative control code according to the first negative input code, the second positive control code preventing the positive electrical module from providing the positive current to the output.

9. (original) The converter of claim 1 wherein the positive control code comprises a plurality of positive control bits, the positive electrical module having a plurality of positive current sources, each positive current source corresponding to a positive control bit in order to provide a positive current to a first node according to the positive control bit, and the negative control code comprises a plurality of negative control bits, the negative electrical module having a plurality of negative current sources, each negative current source corresponding to a negative control bit in order to provide a negative current to the first node according to the negative control bit.

10. (original) The converter of claim 9 wherein the negative current sources of the negative electrical module separately correspond to the positive current sources

PAGE 9/22 * RCVD AT 6/17/2004 9:58:32 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729318 * CSID:8064986673 * DURATION (mm-ss):06-52

of the positive electrical module, the negative current sources providing negative current and the positive current sources providing positive current, the magnitude of the negative current being the same as that of the positive current, the phase of the negative current being opposite that of the positive current.

11. (currently amended) A method used in a converter for providing an output voltage according to an signed binary input code, the method comprising:

generating a positive control code and a negative control code according to the input code;

providing a positive current to an output according to the positive control code;

providing a negative current to the output according to the negative control code; and

providing a constant current to the output when the negative current is provided;

wherein the constant current corresponds to a unit current and the negative current is a multiple of the unit current.

12. (original) The method of claim 11 wherein the input code includes a sign code and a value code.

13. (original) The method of claim 12 wherein steps according to the value code are encoded as the negative control code by a first coding method, the value code according to the sign code of the input code, the steps for generating the positive control code and the negative control code according to the input code.

14. (original) The method of claim 13 wherein the first coding method is one's complement arithmetic coding.

15. (currently amended) The method of claim 13 wherein the value code is encoded as the negative control code by the first coding method according to the sign code of the input code, when the sign code corresponds to a predetermined negative sign

PAGE 10/22 * RCVD AT 6/17/2004 9:58:32 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729318 * CSID:8064986673 * DURATION (mm-ss):06-52

code, the value code is encoded as the negative control code by the first coding method.

16. (currently amended) The method of claim 15 wherein when the sign code does not correspond to the predetermined negative sign code, ~~the~~ a negative current provided by ~~the~~ a negative current source is virtually equal to zero according to the negative control code.

17. (original) The method of claim 11 wherein when the input code represents a first negative input code, the absolute value of the value representing the first negative code is equal to the value representing a first positive input code, the magnitude of the negative current being the same as that of the positive current, the phase of the negative current being opposite that of the positive current.

18. (original) The method of claim 11 wherein the input code represents a first negative input code, the first negative input code is encoded by a second coding method, the second coding method is two's complement arithmetic coding.

19. (cancelled)

20. (original) The method of claim 11 wherein the converter is a digital-to-analog converter.

21. (original) An electrical module used in a converter for providing an output voltage according to an input code, the input code including a sign code and a value code, the electrical module comprising:

a positive electrical module for providing a positive current to an output according to a positive control code;

a negative electrical module for providing a negative current to the output according to a negative control code; and

an assistant electrical module for providing a constant current to the output when the negative electrical module provides a

PAGE 11/22 * RCVD AT 6/17/2004 9:58:32 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729318 * CSID:8064986673 * DURATION (mm-ss):06-52

negative current to the output.

22. (original) The electrical module of claim 21 further comprising a control logic for generating the positive control code and the negative control code according to the input code.

23. (original) The electrical module of claim 22 wherein:

when the sign code corresponds to a predetermined negative sign code, the control logic encodes the value code as the negative control code by a first coding method; and

when the sign code does not correspond to the predetermined negative sign code, the negative control code generated by the control logic prevents the negative electrical module from providing the negative current.

24. (original) The electrical module of claim 22 wherein the control logic encodes the value code as the negative control code by a first coding method, the value code corresponding to the sign code of the input code, the first coding method being one's complement arithmetic coding.

25. (original) The electrical module of claim 22 wherein when the input code represents a first negative input code, the first negative code is encoded by a second coding method, the second coding method being two's complement arithmetic coding.

26. (original) The electrical module of claim 21 wherein the assistant electrical module corresponds to a unit current source and current provided by the negative electrical module is a multiple of the unit current.

27. (original) The electrical module of claim 21 wherein if the input code is a first positive input code, a first negative control code is generated according to the

PAGE 12/22 * RCVD AT 6/17/2004 9:58:32 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729318 * CSID:8064986673 * DURATION (mm-ss):06-52

first positive input code, the first negative control code preventing the negative electrical module from providing a negative current to the output.

28. (original) The electrical module of claim 21 wherein if the input code is a first negative input code, a positive control code is generated according to the first negative input code, the positive control code preventing the positive electrical module from providing a positive current to the output.

29. (original) The electrical module of claim 21 wherein the positive control code comprises a plurality of positive control bits, the positive electrical module having a plurality of positive current sources, each positive current source corresponding to a positive control bit in order to provide a positive current to a first node according to the positive control bit, and the negative control code comprises a plurality of negative control bits, the negative electrical module having a plurality of negative current sources, each negative current source corresponding to a negative control bit in order to provide a negative current to the first node according to the negative control bit.

30. (original) The electrical module of claim 29 wherein the negative current sources of the negative electrical module separately correspond to the positive current sources of the positive electrical module, the negative current sources providing negative current and the positive current sources providing positive current, the magnitude of the negative current being the same as that of the positive current, the phase of the negative current being opposite that of the positive current.

PAGE 13/22 * RCVD AT 6/17/2004 9:58:32 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729318 * CSID:8064986673 * DURATION (mm-ss):06-52

AMENDMENTS TO THE CLAIMS

Fig.8 is amended to show the output of the control logic 92 includes X(0) to X(N-2) and Y(0) to Y(N-2). As shown in the dashed block 92, the output of the control logic 92 includes X(0) to X(N-2) and Y(0) to Y(N-2), it doesn't include X(N-1) and Y(N-1). Therefore, no new matter is introduced in this amendment. The amendment is only to fix typos.

PAGE 14/22 * RCVD AT 6/17/2004 9:58:32 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729318 * CSID:8064986673 * DURATION (mm-ss):06-52